

**Patent claims**

1. Adsorbing agent for dust-collecting filters, especially for adsorbing odours, **characterised in that** the adsorbing agent comprises fibres, flakes and/or granulate as a supporting material onto which a powdery adsorption material is applied superficially.
2. Adsorbing agent according to claim 1, **characterised in that** the adsorption material is applied in an amount of 1 to 50 wt-% of the supporting material.
3. Adsorbing agent according to claim 2, **characterised in that** 7 to 25 wt-% are applied.
4. Adsorbing agent according to at least one of claims 1 to 3, **characterised in that** the adsorption material is selected from active charcoal, impregnated active charcoal, functionalised carbon, hydrophobic zeolites, hydrophobic, porous polymers, bentonites and/or crystalline organometallic complexes.
5. Adsorbing agent according to claim 4, **characterised in that** the functionalised carbon is an aromatic carbon skeleton with functional groups.
6. Adsorbing agent according to claim 4, **characterised in that** the active charcoal is coconut shell, wood, rock or bamboo charcoal.

7. Adsorbing agent according to claim 4 or 5, characterised in that the active charcoal is impregnated with acid or basic chemicals and/or with silver salts.
8. Adsorbing agent according to claim 4, characterised in that the zeolites have micropores of a pore size  $> 5 \text{ \AA}$ .
9. Adsorbing agent according to claim 8, characterised in that the pore size of the micropores is  $> 6.5 \text{ \AA}$ .
10. Adsorbing agent according to claim 8 or 9, characterised in that the specific surface of the zeolite is  $> 400 \text{ m}^2/\text{g}$ .
11. Adsorbing agent according to at least one of claims 8 to 10, characterised in that the zeolites have a modulus  $> 200$ , preferably  $> 300$ .
12. Adsorbing agent according to at least one of claims 8 to 11, characterised in that the particle size of the zeolites is in the range between 2 and 30  $\mu\text{m}$ .
13. Adsorbing agent according to claim 4, characterised in that the porous polymers have micropores of 6 to 20  $\text{\AA}$ , mesopores of 20 to 500  $\text{\AA}$  and macropores  $> 500 \text{ \AA}$ .
14. Adsorbing agent according to claim 4 or 13, characterised in that the average pore diameter is between 3 and 300  $\text{\AA}$ .
15. Adsorbing agent according to claim 4, 13 or 14, characterised in that the particle size of the porous polymers is in the range between 1 and 500  $\mu\text{m}$ , preferably between 1 and 200  $\mu\text{m}$ .

16. Adsorbing agent according to at least one of claims 4, 13 to 15, **characterised in that** the pore volume is  $\geq 0.4 \text{ cm}^3/\text{g}$ .
17. Adsorbing agent according to at least one of claims 4, 13 to 15, **characterised in that** the porous polymers are hydrophobic.
18. Adsorbing agent according to at least one of claims 4, 13 to 17, **characterised in that** the porous polymers are constructed from styrene, acrylic acid and/or their derivatives.
19. Adsorbing agent according to at least one of claims 1 to 18, **characterised in that** the adsorption material is chemically and/or physically bound to the supporting material.
20. Adsorbing agent according to at least one of claims 1 to 19, **characterised in that** the adsorption material is bound to an electrostatically charged supporting material.
21. Adsorbing agent according to at least one of claims 1 to 20, **characterised in that** the adsorption material is powdery and has a mean particle size of 1 to 100  $\mu\text{m}$ .
22. Adsorbing agent according to at least one of claims 1 to 21, **characterised in that** the supporting material comprises fibres which are selected from chemical fibres and/or natural fibres.

23. Adsorbing agent according to claim 22, **characterised in that** the fibres are rendered antibacterial.
24. Adsorbing agent according to claim 22 or 23, **characterised in that** the chemical fibres are cellulose fibres such as viscose and/or synthetic fibres.
25. Adsorbing agent according to claim 24, **characterised in that** the synthetic fibres are selected from fibres formed from polyolefins, polyester, polyamides, polyacrylonitrile and/or polyvinyl alcohol.
26. Adsorbing agent according to claim 22 or 23, **characterised in that** the natural fibres are selected from cellulose, wood fibre materials, kapok, flax, jute, Manila hemp, coco, wool, cotton, Kenaf, abaca, mulberry bast and/or fluff pulp.
27. Adsorbing agent according to at least one of claims 22 to 26, **characterised in that** the fibres are smooth, branched, crimped, hollow and/or textured and have a non-circular (e.g. trilobal) cross-section.
28. Adsorbing agent according to at least one of claims 22 to 27, **characterised in that** the fibres have a mean length of between 0.3 mm and 100 mm, preferably between 0.5 and 70 mm.
29. Adsorbing agent according to claim 28, **characterised in that** the fibres have a mean length of 1 to 9.5 mm.

30. Adsorbing agent according to at least one of claims 1 to 29, **characterised in that** the supporting material comprises flakes which are selected from cellular plastics, non-wovens, textiles, foamed starch, foamed polyolefins, as well as films and recovered fibres.
31. Adsorbing agent according to claim 30, **characterised in that** the flakes have a diameter of 0.3 mm to 30 mm, preferably 0.5 to 20 mm.
32. Adsorbing agent according to claim 31, **characterised in that** the flakes have a diameter of 1 to 9.5 mm.
33. Adsorbing agent according to at least one of claims 1 to 32, **characterised in that** the supporting material comprises granulates which are selected from macroporous polymers.
34. Adsorbing agent according to claim 33, **characterised in that** the particle size of the granulates is in the range between 0.2 and 1.5 mm, preferably between 0.3 and 1.0 mm.
35. Adsorbing agent according to claim 33 or 34, **characterised in that** the macroporous polymers are constructed from polystyrene, acrylic acid and/or their derivatives.
36. Adsorbing agent according to at least one of claims 33 to 36, **characterised in that** the surface of the macroporous polymers is  $> 200 \text{ m}^2/\text{g}$ , preferably  $> 350 \text{ m}^2/\text{g}$ .
37. Adsorbing agent according to at least one of claims 33 to 36, **characterised in that** the porosity  $\geq 0.4 \text{ ml/ml}$ .

38. Adsorbing agent according to at least one of claims 1 to 37, **characterised in that** the adsorbing agent is enclosed in an air-permeable wrapper.
39. Adsorbing agent according to claim 38, **characterised in that** the wrapper is an air-permeable non-woven.
40. Dust collection chamber, especially for a vacuum cleaner, to which air can be applied, **characterised in that** an adsorbing agent according to one of claims 1 to 39 is contained in the dust collection chamber.
41. Dust collection chamber according to claim 40, **characterised in that** 0.03 to 5 g of the adsorbing agent per 1000 cm<sup>3</sup> are contained in the dust collection chamber.
42. Dust collection chamber according to claim 41, **characterised in that** 0.3 to 2 g adsorbing agent are contained per 1000 cm<sup>3</sup>.
43. Dust collection chamber according to at least one of claims 40 to 42, **characterised in that** it is the dust collection chamber of a bagless vacuum cleaner.
44. Dust collection chamber according to at least one of claims 40 to 43, **characterised in that** that it is formed by a refuse collection container.
45. Dust collection chamber according to at least one of claims 40 to 44, **characterised in that** it is formed by a dust-collecting filter made of an air-permeable filter material.

46. Dust collection chamber according to claim 45, **characterised in that** the adsorbing agent is present in a bag, which has an air-permeable wrapper, in the dust-collecting filter.
47. Dust collection chamber according to claim 45 or 46, **characterised in that** the adsorbing agent is arranged under a covering in part of the inner surface of the dust-collecting filter.
48. Dust collection chamber according to claim 47, **characterised in that** the covering is a non-woven layer.
49. Dust collection chamber according to claim 47, **characterised in that** the adsorbing agent is contained in a pad which is arranged on part of the inner surface of the dust-collecting filter.
50. Dust collection chamber according to claim 49, **characterised in that** the pad comprises at least one layer of a filter paper or of a special non-woven, the adsorbing agent arranged on the surface of the filter paper being covered by at least one non-woven layer.
51. Dust collection chamber according to at least one of claims 46 to 50, **characterised in that** the wrapper material of the bag or the covering is formed from a material which can be destroyed under operating conditions.
52. Dust collection chamber according to at least one of claims 45 to 51, **characterised in that** the dust-collecting filter

is of such dimensions and design that it can be operated with a volume flow rate of 10 cm<sup>3</sup>/h to 400 m<sup>3</sup>/h.

53. Dust collection chamber according to at least one of claims 45 or 52, **characterised in that** the filter material of the dust-collecting filter is a single-layer or multilayer paper and/or non-woven material.
54. Dust collection chamber according to at least one of claims 45 to 53, **characterised in that** it is formed by a vacuum-cleaner bag.
55. Dust collection chamber according to at least one of patent claims 45 to 53, **characterised in that** it is formed by a pleated filter or bag filter.
56. Method for adsorbing odours in a dust collection chamber according to at least one of claims 45 to 55, **characterised in that** an adsorbing agent according to one of claims 1 to 39 is used for it.
57. Method according to claim 56, **characterised in that** 0.2 to 5 g adsorbing agent are used per 1000 cm<sup>3</sup> dust collection chamber.
58. Method according to claim 56 or 57, **characterised in that** an air-permeable dust-collecting filter is used as the dust collection chamber.
59. Method according to claim 58, **characterised in that** the adsorbing agent is introduced into the dust-collecting



filter before the start of a first suction process or at the start of the suction process.

60. Method according to at least one of claims 58 or 59, **characterised in that** the adsorbing agent is present in a wrapper and is introduced into the dust-collecting filter before the start of a first suction process or at the start of the suction process.
61. Method according to claim 60, **characterised in that** the wrapper is so designed that it is destroyed at the given volume flow rate.
62. Method according to at least one of claims 58 to 61, **characterised in that** this is a method for vacuum-cleaning using a cylinder vacuum-cleaner or an upright vacuum-cleaner.
63. Use of the adsorbing agent according to at least one of claims 1 to 39 for adsorbing odours.